

CLAIMS

1. An antenna for a radio terminal device comprising:
 - (a)an antenna element;
 - 5 (b)and an antenna characteristic switching section for switching between the states in which a current distribution exists only on and in the vicinity of the antenna element and in which a current distribution exists not only on and in the vicinity of the antenna element but also on the other portions.
- 10 2. An antenna for a radio terminal device comprising:
 - (a)an antenna element;
 - (b)a conductive substrate arranged close in parallel to the long side of the antenna element with a sufficiently small spacing as compared with the wavelength in a twisted position relationship;
 - 15 (c)and an antenna characteristic switching section, being connected to one end of the antenna element in the vicinity of the conductive substrate, for changing the state of continuity with the conductive substrate.
3. An antenna for a radio terminal device according to claim 2, wherein the antenna characteristic switching section has a switch and a coil connected
20 each other in series and one end of the coil is connected to the antenna element.
4. An antenna for a radio terminal device according to claim 2, wherein the antenna characteristic switching section has a diode and a coil connected each other in series.
- 25 5. An antenna for a radio terminal device according to any one of claims 1 to 4, wherein any one of a loop antenna, dipole antenna, and diversity antenna is used as the antenna element.

6. An antenna for a radio terminal device according to any one of claims 1 to 4, wherein the antenna element is a dipole antenna and also an array antenna configured by two antenna elements.

7. A radio terminal device comprising:

- 5 (a)an antenna for a radio terminal device as claimed in claim 1 or 2;
 (b)and a RF circuit section connected to the other end of the antenna element.

8. A radio terminal device comprising:

- (a)an antenna element;
10 (b)a conductive substrate arranged close in parallel to the long side of the antenna element with a sufficiently small spacing as compared with the wavelength in a twisted position relationship;
 (c)a RF circuit section connected to one end of the antenna element;
 (d)and an antenna characteristic switching section which is connected
15 to the portion in the vicinity of the end connected with the RF circuit section and in proximity to the conductive substrate, for changing the state of continuity with the conductive substrate,

 wherein the other end of the antenna element in proximity to the conductive substrate is connected to the conductive substrate.

20 9. A radio terminal device comprising:

- (a)an antenna element;
 (b)a conductive substrate arranged close in parallel to the long side of the antenna element with a sufficiently small spacing as compared with the wavelength in a twisted position relationship;
25 (c)a balanced/unbalanced converter connected to both ends of the antenna element;
 (d)a RF circuit section connected to said balanced/unbalanced

converter;

(e) and an antenna characteristic switching section being connected to the antenna element in the vicinity of the conductive substrate, for changing the state of continuity with the conductive substrate.

- 5 10. A radio terminal device according to any one of claims 7 to 9, further comprising:

(a) an operating pattern estimator for discriminating whether the present communication media is a telephone call or a data communication, to notify the antenna characteristic switching section,

- 10 wherein the antenna characteristic switching section performs a predetermined switching on the basis of the notification.

11. A radio terminal device according to any one of claims 7 to 9, further comprising:

15 (a) a propagation environment estimator for detecting a received power or a polarization and direction of an arrival radio wave, to notify the antenna characteristic switching section,

wherein the antenna characteristic switching section performs a predetermined switching on the basis of the notification.

- 20 12. A radio terminal device according to any one of claims 7 to 9, further comprising:

(a) A tilt detector for detecting the tilt angle of the radio terminal device to notify the antenna characteristic switching section,

wherein the antenna characteristic switching section performs a predetermined switching on the basis of the notification.

- 25 13. A radio terminal device according to any one of claims 7 to 12, wherein the antenna characteristic switching section has a switch and a coil being connected each other in series, one end of the coil being connected to said

antenna element.

14. A radio terminal device according to any one of claims 7 to 12, wherein the antenna characteristic switching section has a diode and a coil being connected each other in series.

5 15. A radio terminal device according to any one of claims 7 to 14, wherein the antenna element is any one of a loop antenna, dipole antenna, and diversity antenna.

10 16. A radio terminal device according to any one of claims 7 to 14, wherein the antenna element is a dipole antenna and also an array antenna configured by two antenna elements.